Amendment to the Specification

Please amend the specification as follows to correct grammatical and typographical errors. In accordance with 37 CFR 121(b), replacement paragraphs are provided with strikethroughs or double brackets to indicate deleted material, and underlining to indicate added material.

Please replace the second paragraph, lines 11-17, on page 2 of the specification with the following replacement paragraph:

One of the very desirable attributes of a message passing system is to have various hardware tasks associated with a specific channel to communicate with each other. However, one of the specific problems that can occur in message passing systems , such as those employing communication adapters ~~occurs~~ , is when there are several tasks associated with a specific channel, and one of these tasks is copying a key control block from external memory into some local memory. In this circumstance, the other tasks need to be told to wait for this control block to get to the local memory.

Please replace the third paragraph, lines 18-28, on page 2 of the specification with the following replacement paragraph:

One of the ways for solving this problem is via the creation of a semaphore for every potential action for every channel that is supported by the adapter. When a task wants to perform this action for a specific channel, it locks this semaphore, blocking all other tasks from performing this action to this channel. When the action has completed, the task can then leave a specific indicator (an "encode") in the semaphore, indicating to all other interested tasks that this particular action has completed. There are, however, several problems with this approach. For example, an adapter ~~support~~ supports thousands of channels or an adapter may have a large number of actions that it wants to perform on ~~that~~ a channel (such as copying in a key control block into local memory). ~~In this regard it is noted that locking~~ Locking and unlocking semaphores is usually a slow process because of the communication coordination and overhead required. [[.]]

Please replace the first eight paragraphs of the Summary of the Invention, pages 3 and 4 of the specification, with the following replacement paragraphs:

In accordance with one aspect of the present invention, there is provided a specialized hardware register, the "channel state register" (CH_STATE), which is a register that is associated with a specific channel and is only accessed by a task associated with the specific channel. Any value placed in the CH_STATE register is immediately seen only by the other hardware tasks associated with the same channel. ~~Note that this~~ This hardware register is different from a "general purpose register" (GP register), because only those tasks that <u>are</u> associated with a specific channel access the CH_STATE register for that channel. It is also different from a "task register" (TR register), which can only be accessed by the task associated with it. One ~~of the key aspects of the present invention is that we are~~ <u>aspect of the present invention involves</u> moving the communication between one task and another task into ~~a~~ <u>the</u> specialized register, which is directly accessible by the associated tasks. This register is much "closer" to the processing unit that local or external memory, and hence much faster as a means of communication.[[ )]]

In accordance with another aspect of the present invention, communication parameters are first established with link message packet header information with desired memory locations at both ends of the communication path. The communications adapter of the present invention ~~are~~ <u>is</u> provided with processing engines ~~which~~ <u>that</u> are capable of accepting and acting on these parameters using commands received from the data processing nodes in a loosely coupled network.

In accordance with another aspect of the present invention, the communication adapter is provided with specific hardware for processing script commands for the rapid formatting of message packet header information.

In accordance with another aspect of the present invention, the communication adapter is provided with command processing capabilities which render it possible to transmit, in a single packet, in direct memory to memory fashion, information contained within disjoint (non-contiguous) regions of source memory. This is done through the use of a preload operation.

In accordance with another aspect of the present invention, the communication adapter is provided with the ability to accept commands in which the desired message packet is broadcast, not to a single adapter connected to a receiving node, but ~~to which is instead broadcast~~ to all of the nodes in the network. Special codes used in the transfer operation are used to indicate that all of the adapters are intended as recipients of the message packet. Additionally, the presence of user keys ~~also~~ renders the system capable of operation in a multicast fashion as well as the ~~originally intended~~ broadcast mode.

In accordance with another aspect of the present invention, ~~the communication adapter~~ the commands, data, message packets, parameters and instructions received by the adapter are processed by the adapter using a programmable instruction processor capable of recognizing commands and data for transfer of information within the message packets directly to memory locations within a targeted node.

In accordance with another aspect of the present invention, the communication adapters are provided with mechanisms for the receipt of time of day information. ~~It is this information which is important~~ This information allows for comparing time stamp information to determine packet age. The adapters periodically receive time of day information from a master node/master adapter and determine if any broadcasts have been missed. If too many are missed, drift corrections are requested. In this way, adapter synchronization is significantly improved.

In accordance with another aspect of the present invention, the communication adapters are provided with internal data storage indications reflecting the status of the individual adapter as ~~being~~ either a master or slave adapter. In addition, these indications ~~also~~ reflect the status of the individual adapters as ~~being~~ backup adapters ~~which~~ that are capable of taking over the processing of message packet transfer.